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INFORMATION DISCLOSURE STATEMENT BY APPLICANT

Title	Collapsible Structures
Application Number	
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First Named Inventor	Richard Harrison
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Examiner Name	
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Information Disclosure

The inventors wish to advise the patent examiner of certain patents which contain information which might be considered to be related to this application.

US 6,276,548B1 - Mitchell:

This patent discloses a collapsible basket that "includes a collapsible frame having a collapsible sub-frame supported solely by collapsible frame sides. Each of the frame sides has a single pair of first and second leg members having first and second upper and lower ends. The first and second leg members in each of the frame sides are pivotably connected together between the first and second upper and lower ends so that the first and second upper and lower ends are unrestrained with respect to the distance in height between them when the frame is collapsed. The first and second upper ends of the pair of first and second leg members are pivotably connected to the sub-frame at pairs of relative spaced apart first and second positions on the sub-frame such that the first position in one of the pairs of relative spaced apart first and second positions is the second position in an adjacent one of the pairs of relative spaced apart first and second positions. The first and second lower ends of adjacent ones of the pair of first and second leg members are pivotably connected." Our invention also includes a similar structure described as two crossed support arms per side connected to corner brackets at the upper and lower ends of each support arm. In several embodiments of our invention, the crossed support arms are comprised of an intermediate tubular section and a pair of outer tubular sections that telescope opposite ends into and out of said intermediate section. A means for locking the outer telescoping tubular sections at points equal distance to the pivotal connection point is provided. Each outer tubular section has formed therein a plurality of longitudinally spaced holes. Said holes are spaced identically for each of the out tubular sections on a side and for each of the tubular sections on the side opposite. Thus assuring that the pivotal connection point for each pair of crossed support arms remains centered within the side defined by a string stretched around the outmost ends of the four outer tubular sections on each side and also centered with the side opposite. Each intermediate tubular section has a hole formed therein similar to the holes in the

outer telescoping tubular sections. A hairpin or V-shaped leaf spring is housed in the inner end of each tubular section and compressed between the opposing inside faces of the tubes. One of the legs of each leaf spring is provided with a radially projecting button terminating in a rounded end and slidable engaging hole and a selected axially aligned hole to releasably lock intermediate tubular section and respective outer tubular elements and thus releasably lock crossed support arms at a desired adjusted length.

The crossed support arms, however, is where the similarity ends. **US 6,276,584** continues: "The sub-frame includes side members extending between the first and second position on the sub-frame. Each of the side members has first and second side ends pivotably connect to corresponding ones of the first and second ends of each of the pair of first and second leg members, respectively, and a pivotable joint between the first and second side ends. A bag having multiple sides attached to a bottom and having an open top is supportably connected to the sub-frame." Our invention does not have pivotable jointed side members. In one embodiment of our invention, we do replace one pair of crossed support arms with a pair of detachable horizontal telescoping support bars that are pivotably attached at the end the non-detachable end. Although these bars do extend between the corner brackets in a manner similar to the previously described side members extending between the first and second position on the sub-frame, they are detachable, telescoping, not jointed, and are not in addition to crossed support arms but are replacement for said crossed support arms.

Moreover, **US 6,276,548** sub-frame is a rigid structure, whereas, in several embodiments of our invention, a flexible means of attaching the perimeter corners is disclosed. In addition, the bag in **US 6,274,548** is not a part of the frame structure, whereas, in several embodiments of our invention, the basket, tray or bag is incorporated into the frame structure so as to hold the frame in its open position.

Further more, although **US 6,276,548** incorporates wheels no provision has been made to keep the upper and lower brackets from twisting when weight is applied to the device. Whereas, in several embodiments of our invention anti torque posts have been incorporated to keep the wheels aligned with the ground.

In addition, **US 6,276,548** by definition is always limited to a square configuration whose length, width and height cannot be altered for an assembled unit. In our invention the frame length, width or height of an assembled unit can be alter to meet the user needs.

Finally, **US 6,276,548** does not have handles or a push bar.

US 5,984,406 - Lee:

This patent discloses: "a folding chair having a frame consisting of a pair of front crossed legs, a pair of back crossed legs, and two pair of side crossed legs, each pair of crossed legs pivotally connected together where they cross. The lower ends of the front legs and the lower, front ends of the side legs are pivotally connected to first and second lower, front pads. The loser ends of the

back legs and the loser, back ends of the side legs are pivotally connected to first and second lower, back pads. The upper ends of the back legs and the upper ends of the side legs are pivotally connected to first and second upper, back pads. The upper ends of the front legs and the upper, front ends of the side legs are pivotally connected to first and second upper, front pads. The upper ends of the front legs slidably pass through the first and second upper front pads, the upper ends bent to form hand rests above the upper front pads."

Some embodiments of our invention are like US 5,948,406 in that each has a pair of bisecting pivotally connected crossed support arms on each side with each pair of crossed arm supports intersecting at their mid point and each pair of crossed support arms connected to their adjacent side crossed support arms at an upper and lower corner bracket. They differ in that whereas the upper ends of the front legs slidably pass through the first and second upper front pads in US 5,948,406 to form hand rests, in several embodiments of our invention, the upper rear ends of the side legs slidably pass through the upper rear corner brackets and form handles that can be used to push, lift or tilt the cart and its content.

Other elements of our invention such as wheels, anti torque posts, adjustable length, width, and height means, detachable push bar, carrying means for materials such as trays, baskets, or bags, said carrying means incorporated into the carts frame structure and detachable, telescoping, horizontal support bars are elements not present in US 5,948,406.

US 5,290,050 – Kim:

This patent describes a collapsible basket structure that can be used as a cart. The frame is comprised of a number of lazytongs frames that are connected to the bottom or floor. The floor consisting of support bars that are radially arrayed and disposed in a common plane and are disposed in an umbrella-like disposition when the structure is in a partly erect condition. The support bars comprise longer support bars and shorter support bars, the longer bars being connected at a first end of each to a lower part of the enclosure where one lazytongs frame is connected to another. When the enclosure is erect, the said first ends of the bards are connected at the bottom where corners of the enclosure are defined by meeting of sides of adjacent lazytongs frames. The shorter support bars are connected at a first end of a lazytongs frame at the bottom of the frame at a location intermediate the sides of the frame.

Opposite second ends of the support bars are connected to a hub ring. The connections of the support bars to the hub ring are pivoted ones. The first ends all support bars also are pivot connected to the enclosure. In the case of the longer support bars, the pivot fitting at the lower part of the enclosure to which frame sides of adjacent lazytongs frames are pivoted also will serve as the component for pivoting mounting of the longer support bars. The size of the basket formed by the lazytongs frames can be modified by shortening or length the support bars that are of a telescoping locking nature.

This invention and ours have several similarities that are obvious. Through the adjustment of the length of the support arms the length, width and height of the device can be adjusted. They differ, however, in that US 5,290,050 requires that the length of all sides must be of equal length to maintain a rectangular shape and thus an increase or decrease in length of support arms always results in a square. The same functional adjustment of length, width and height is performed in our invention by the SLE. Moreover, in our invention, the length and width can be adjusted independently.

More obvious differences between US 5,290,050 and our invention is the fact that it is the bottom US 5,290,050 that telescopes and the sides of our invention. In addition, the number of support arms differs in that US 5,290,050 requires a minimum of eight telescoping support arms to form a rectangle bottom and our invention requires two telescoping support arms to form a side.

Construction of the arms is also significantly different. In US 5,290,050 each support arm connects to a center hub and a corner or intermediate position on the lazytongs frame and rotates around the hub when the device is closed. Whereas, in our invention, each of the two support arms are rigid and do not pivot around a hub. In addition, our support arms are connected to corner brackets and the two support arms are pivotally connected at the point where they bisect each other and do not connect to a center hub.

US 6,247,749 B1-Yu:

This patent describes a folding chair with upright telescopic supports. The chair described is "a folding chair of the type having a frame constructed of pivotally connected scissor like "X" shaped structure strut members supporting a sling seat, the lower ends of which form two front feet and two rear feet and the upper ends of which form two front seat corners and two rear seat corners of the chair. The folding chair includes a pair of upright telescopic supports mounted between the two front seat corners and the two front feet."

Although some embodiments of our invention sometimes have an "X" shaped frame and telescoping vertical members, the differences between the two inventions are significant.

- US 6,247,749 describes telescoping uprights for a chair – we describe a number of collapsible structures with none of them being a chair or a table which is defined as a chair in US 6,247,749.
- US 6,247,749 describes the structures as symmetrical "X" shaped frame – we describe a number of embodiments which are not symmetrical. They include collapsible frames that are adjustable in one or more directions and those which use detachable telescoping horizontal support bars as a way to provide access to the inside of a collapsible structure.
- US 6,247,749 describes the vertical posts as extending between the front lower corner and the front upper corner – we describe a number of embodiments of collapsible structures where the vertical telescoping posts are not attached to the corner posts but slidably pass through the upper front corner posts.

- The vertical telescoping posts in our invention perform functions not suggest by 6,247,749 – in a number of embodiments of our invention, wheels are attached below the lower corner brackets to provide a means for rolling the collapsible structures. The vertical posts provide an anti-torque function to prevent the lower corner bracket from twisting and causing the wheels to tilting and thus causing them to mal function. In addition, the vertical posts are also used for mounting additional cart shelves and as attachment points for Structure Locking Elements.